Confined Space Entry Hazard Alert

For Public Works Employers and Employees In Massachusetts

Executive Office of Labor and Workforce Development
Department of Labor Standards

Fatalities in Public Works Departments

A National Institute of Occupational Safety and Health (NIOSH) publication "Worker Deaths in Confined Spaces" describes the fatalities of 480 workers between 1983-1993. Many of these fatalities involved public works employees. These include:

- A wastewater treatment plant supervisor who entered a manhole that was deficient in oxygen. A second supervisor who entered to rescue also died in this incident.
- Two wastewater treatment plant workers drowned when raw wastewater flooded a pipe gallery they had entered.
- A meter reader died due to toxic methane and carbon monoxide in a meter vault.
- A sewer maintenance worker drowned when cleaning out a sewer wet well.
- A worker died when he collapsed after entering a 8 foot deep valve chamber to open and bleed a water line.
- A police officer and 2 sewer workers attempted to rescue a third sewer worker overcome by sewer gas at the bottom of an underground pumping station. All 4 died.

All of these fatalities could have been prevented had the appropriate precautions been taken.

What is a Confined Space?

A confined space is an area which is large enough for a person to enter, has a limited means of entry or egress and is not designed for continuous human occupancy. Confined spaces in public works include but are not limited to water and sewer pipes, pumping stations, manholes, meter vaults, tunnels, tanks, wastewater wetwells, grit chambers, utility tunnels, crawl spaces under floors, trenches, water reservoirs, holding tanks, and pits.

What are the Hazards?

Both atmospheric and physical hazards may exist in confined spaces. Confined spaces may lack sufficient oxygen. They may also contain toxic vapors such as hydrogen sulfide or explosive vapors such as methane. Atmospheres that are safe one minute may become fatal the next. Physical hazards such as electrocution, entrapment or engulfment are also common in confined spaces.

What precautions should be taken?

No confined space should be entered without first knowing the hazards involved. All entries must be carefully planned. Most confined spaces in public works departments have the potential for both atmospheric and safety hazards.

The hazards in the space must first be evaluated and eliminated wherever possible. The space must then be tested to insure that there is sufficient oxygen and that there are no significant levels of toxic or explosive gases or vapors. The space should be mechanically ventilated to control any potential hazardous atmospheres. All safety hazards including electrical, mechanical and active flow hazards must be eliminated to the extent possible. If you are unsure if a confined space is hazardous, you should assume and plan for the worst.

Employers should make a determination as to whether or not the spaces are classified as "permit-required" or "non-permit required" spaces. Most entries into confined spaces will require a permit. At least one attendant must be present during the entry. Rescue procedures must be in place. All employees must be properly trained in the use of equipment and the procedures to be followed during entry.

Who regulates confined space entry for public works employees in Massachusetts?

While private sector employees are covered by OSHA Standards, public sector employees in Massachusetts are not. More than half the States now cover public sector employees with OSHA Standards or equivalent. The Department of Labor Standards (DLS), in accordance with Chapter 149 section 6, is charged with inspecting workplaces in Massachusetts and determining what procedures and practices are required to protect workers. As a matter of policy, our office references OSHA Standards as well as other consensus standards when we determine whether proper procedures are being followed to protect workers. Since there are no specific standards for confined space entry, ***our office recommends that the OSHA Confined Space entry standard be followed at a minimum. By following the OSHA Standard you will be considered in compliance with MGL Chapter 149 Section 6.***

What steps are considered necessary for compliance?

Step 1

Identify all your confined spaces. Employers should make a determination as to whether or not the spaces are classified as "permit-required" or "non-permit required" spaces. Permit required confined spaces should be posted as such. If this is not possible, employees must be informed of the locations of these spaces.

Step 2

Determine if entry is necessary or if work can be performed without entry. This may include redesign of spaces to include the relocation of valves or meters so they can be adjusted or checked without entry into the space. Whenever possible, eliminate the need for entry.

Step 3

Identify the atmospheric and safety hazards that exist in the confined spaces. Atmospheric hazards include the lack of sufficient oxygen and the presence of toxic or flammable gases. Safety hazards include slips and falls, electrical, mechanical, hydraulic, engulfment, entrapment or active flow hazards. Other hazards such as temperature extremes, falling objects and infectious agents may also be involved.

Step 4

Develop a written procedure for entry into confined spaces. The written procedure must address all issues including **permit procedures** and **rescue plans**. Other areas that should be addressed in the plan include a calibration and maintenance schedule for all equipment, personal protective equipment such as hard hats, eye protection, and protective clothing that must be worn. Information on training that is required prior to entry should also be in the written program. A copy of a model Confined Space Plan is available from our office on disk. See the attached form.

Note that it has been the experience of our office that even if you have trained employees in the proper entry procedures, unless a municipality has a comprehensive **WRITTEN PROGRAM** that is well known to employees, the program will be ineffective. It is recommended that employees be actively involved in developing such a plan.

Step 5

Purchase necessary equipment for monitoring and entering confined spaces. This typically includes a meter that can measure % oxygen, % combustible gases, and parts per million toxic gases such as hydrogen sulfide, carbon monoxide, chlorine. Additional equipment such as harnesses, tripods and winches may be needed for entry and rescue. All equipment must be calibrated and maintained in good working order.

Step 6

Before entering a space, be sure at least one attendant is present and that there are rescue procedures in place. Test the space for oxygen first, then test for the presence of flammable or toxic gases. Ventilate the spaces whenever possible to minimize the potential for hazardous atmospheres. Eliminate or minimize the safety hazards by such means as lockout/tagout of electrical, mechanical or active flow hazards.

Step 7

Develop a rescue plan to rescue an individual from a confined space. It is estimated that two out of every three fatalities that occur in confined spaces are rescue personnel. If your Fire Department is to be used for rescue, be sure to work with them ahead of time on response procedures. A response time of more than several minutes may result in a fatality.

The safest plan for rescue is non-entry rescue such as is done for nearly all entries at the MWRA. Nearly all entries are "attached entries" where employees entering a confined space are attached to a retrieval system via a harness. The attendants are trained to remove a person from the space without entry using a mechanical tripod and winch device. If attached entry is not possible, a separate detailed entry and rescue procedure must be used.

Step 8

Train all employees in the hazards of confined spaces and in the proper entry procedures. Note that while excellent training on confined space entry may be available through a number of sources, there is no substitute for training in your municipalities own specific procedures. If an outside training source is used, be sure to supplement that training by providing additional training in your own equipment and procedures for confined space entry.

Step 9

Continuously reinforce the use of proper procedures for entry. Review procedures periodically. Retraining of employees should be done at least annually or whenever procedures or conditions change. Provide incentives for employees to work safely such as evaluating worker use of safe work practices in annual performance reviews.

Where can I get more information?

You may request ***written materials*** as indicated below. You may also request an ***on site consultation*** by one of our staff. This consultation will be provided free of charge and will include a review of your current confined space entry program. The consultant will provide you with written materials and will review the procedures that you will need to implement. A written report will be issued. There are no fees for this service, or fines or penalties associated with the initial discovery of non-compliance. However, you will be required to comply with some of the more critical recommendations made by the consultant. You will be contacted prior to the on site consultation and the consultation will be provided at your convenience.

If your city or town is located in a MWRA service community, your employees may be able to attend a free ***training*** session at the MWRA facility in Quincy.

The MWRA ***written confined space entry program*** is also available upon request. If you would like more information, contact George Denhard at 617-788-4030.

The OSHA Standard as well as extensive confined space ***information*** can be found on the OSHA Web page **www.osha.gov**. Note that the web page includes "Confined Space Advisor", a program that helps you to identify your confined spaces and assists with OSHA regulatory requirements.

Single copies of the ***book*** Confined Spaces-An AFSCME Manual are available by calling 202-429-1228.

PLEASE PROVIDE THE FOLLOWING INFORMATION:

Photocopy this form and mail to:
Massachusetts Department of Labor Standards
MA Workplace Safety and Health Program
1001 Watertown Street, West Newton, MA 02465
(or fax form to 617-244-2705)

Model Confined Space Entry Written Program disk copy-available in ❑ Hard Copy ❑ CD

OSHA Confined Space Entry Standard ❑

I would like to request an on site consultation at my facility ❑

Name _____ Title: _____

Mailing Address: _____

City/Town: _____ Zip _____

Telephone Number: ( ) _____ E-mail : _____

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Timothy P. Murray, Lt. Governor
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